

APPENDIX 4

Spectra Relevant to Chapter 3

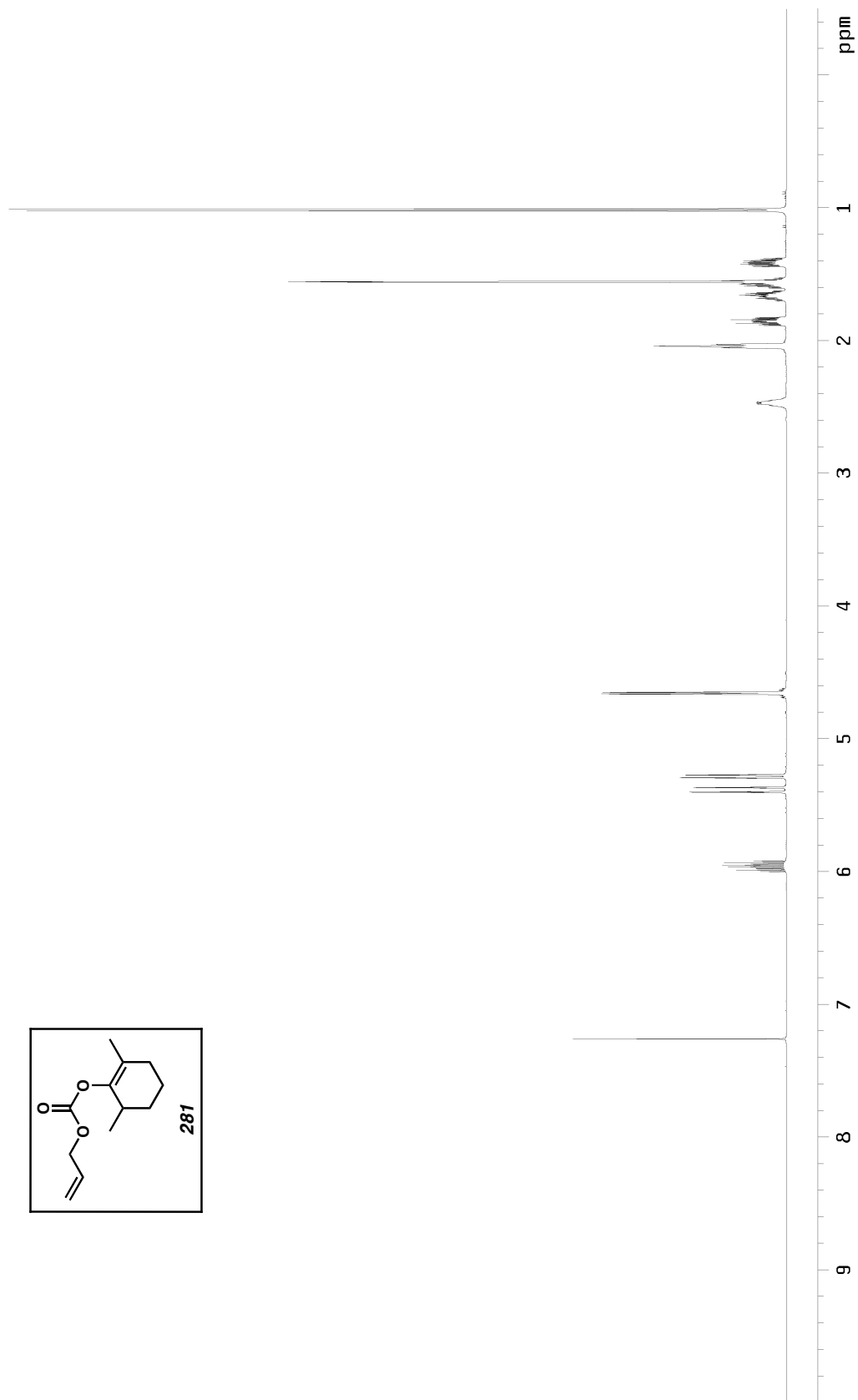


Figure A4.1 ^1H NMR (500 MHz, CDCl_3) of carbonate **281**.

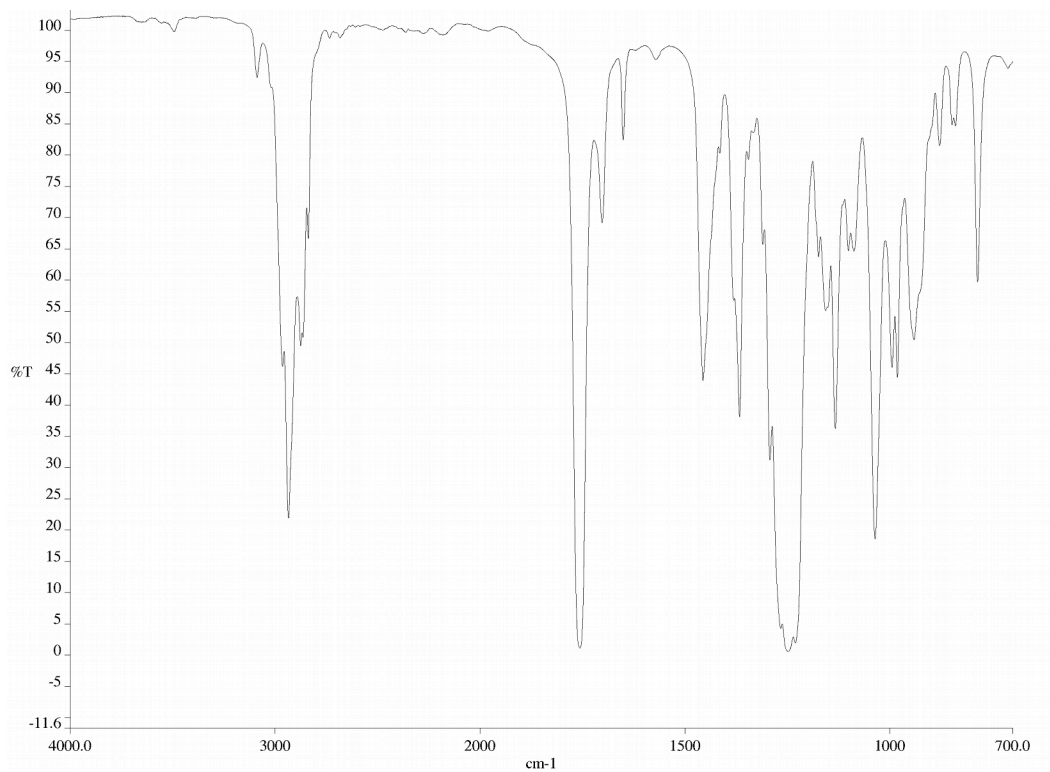


Figure A4.2 Infrared spectrum (thin film/NaCl) of carbonate **281**.

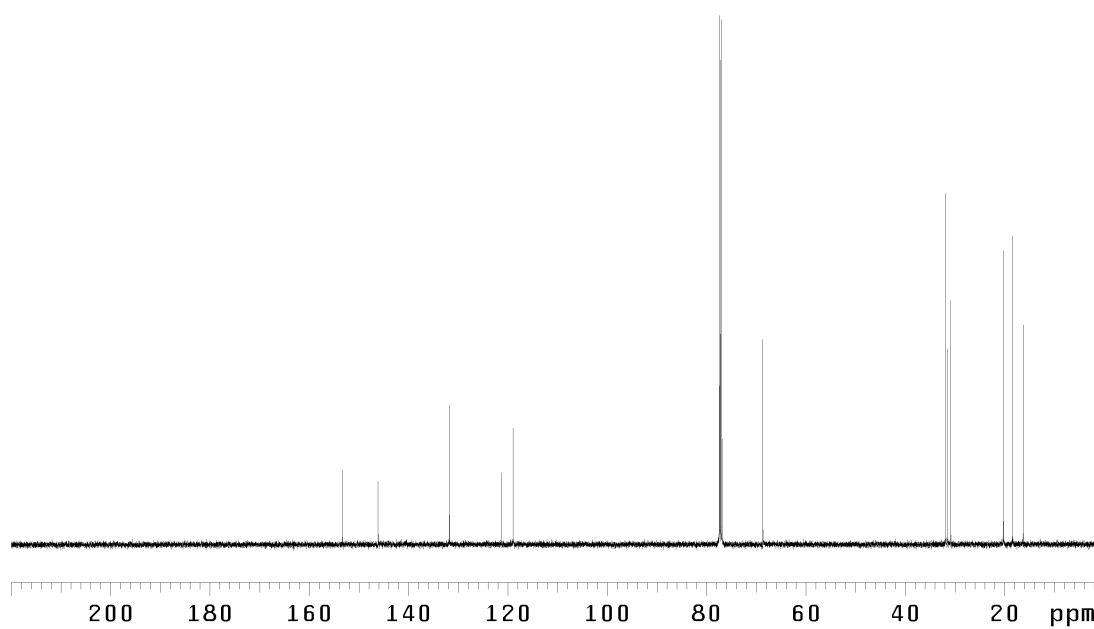


Figure A4.3 ¹³C NMR (125 MHz, CDCl₃) of carbonate **281**.

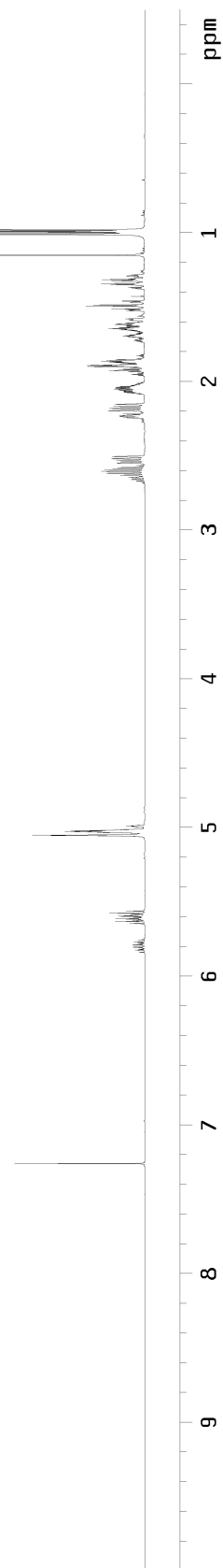
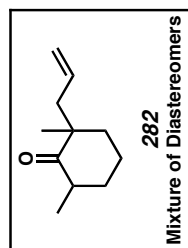


Figure A4.4 ^1H NMR (500 MHz, CDCl_3) of allyl ketone 282.

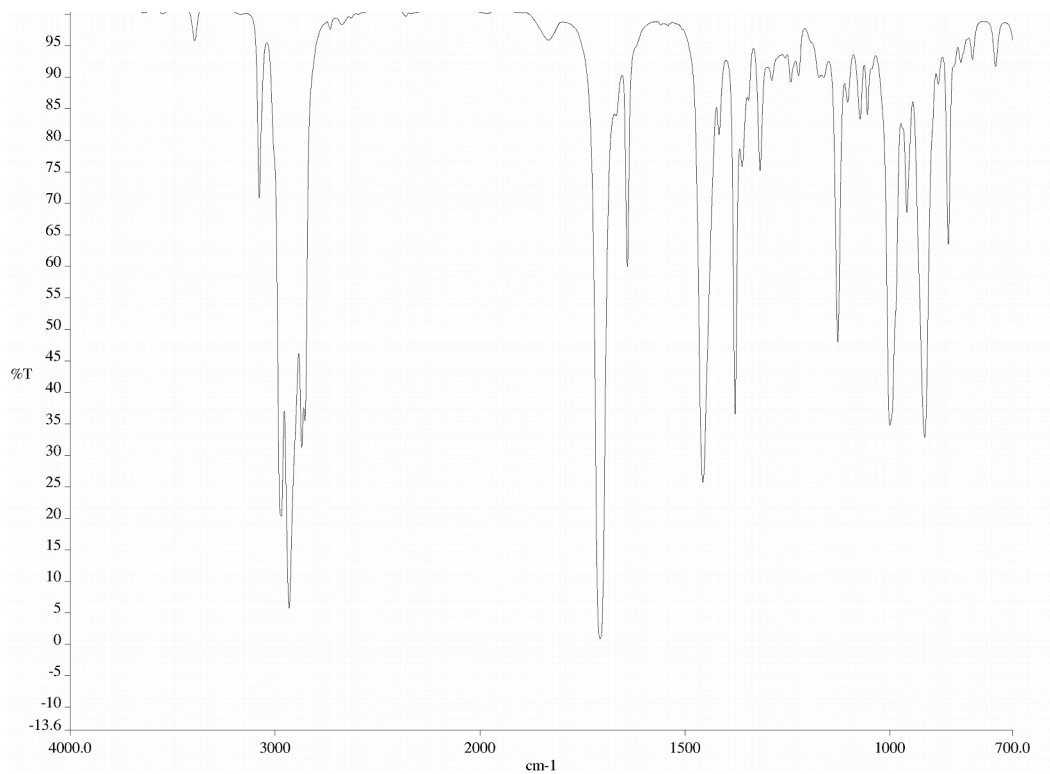


Figure A4.5 Infrared spectrum (thin film/NaCl) of allyl ketone **282**.

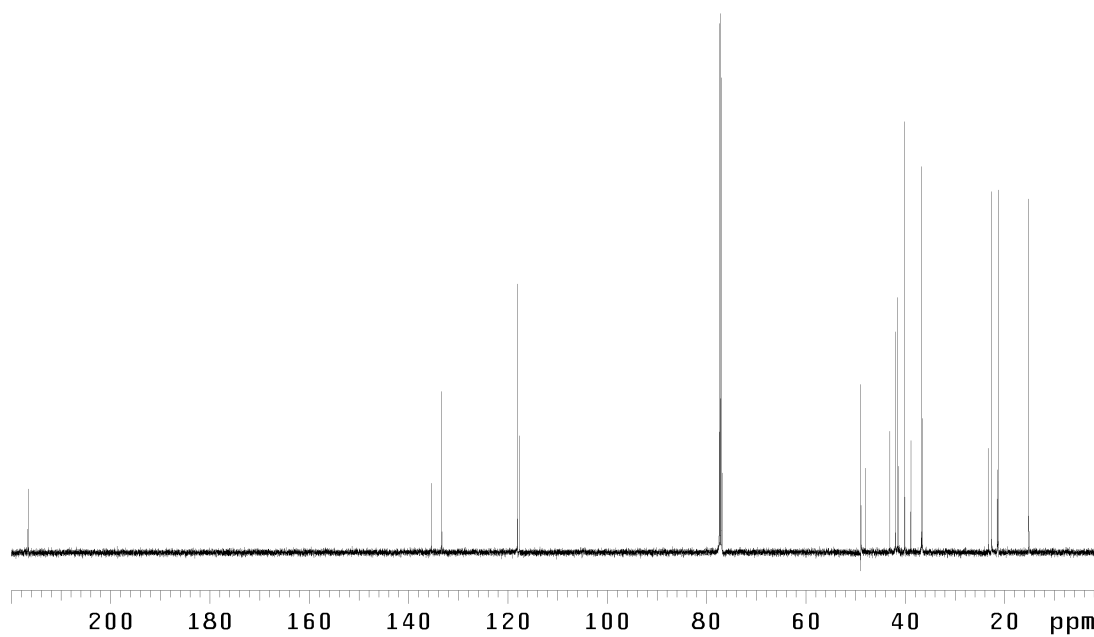


Figure A4.6 ¹³C NMR (125 MHz, CDCl₃) of allyl ketone **282**.

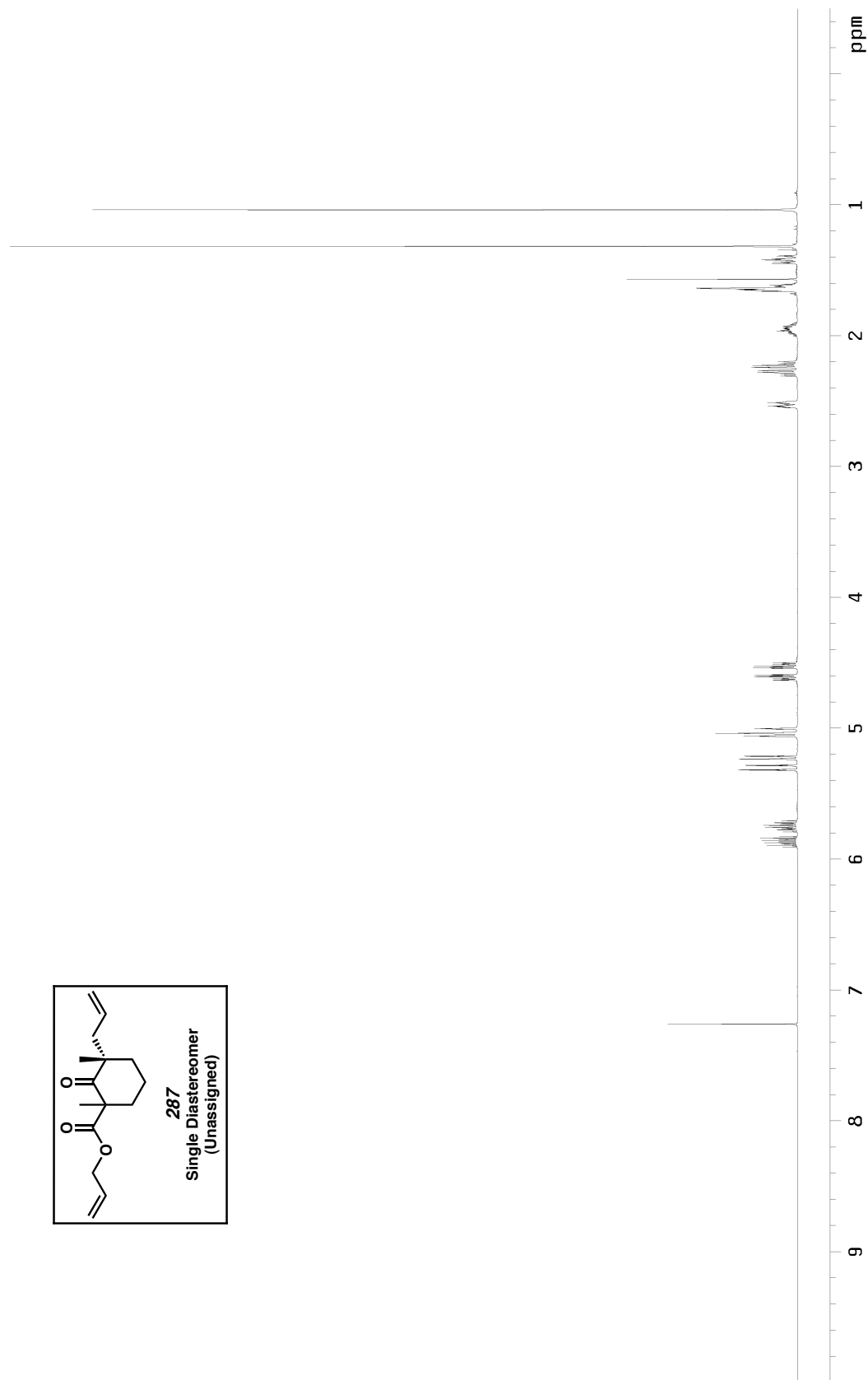


Figure A4.7 ^1H NMR (500 MHz, CDCl_3) of β -ketoester **287**(A).

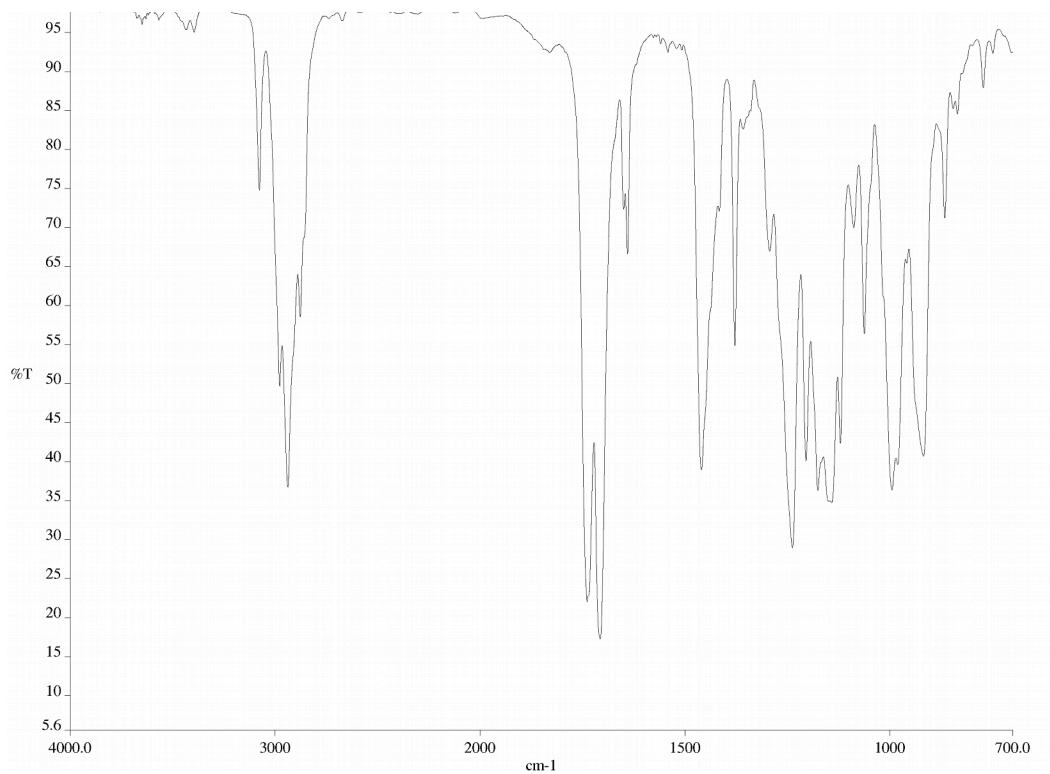


Figure A4.8 Infrared spectrum (thin film/NaCl) of β -ketoester **287(A)**.

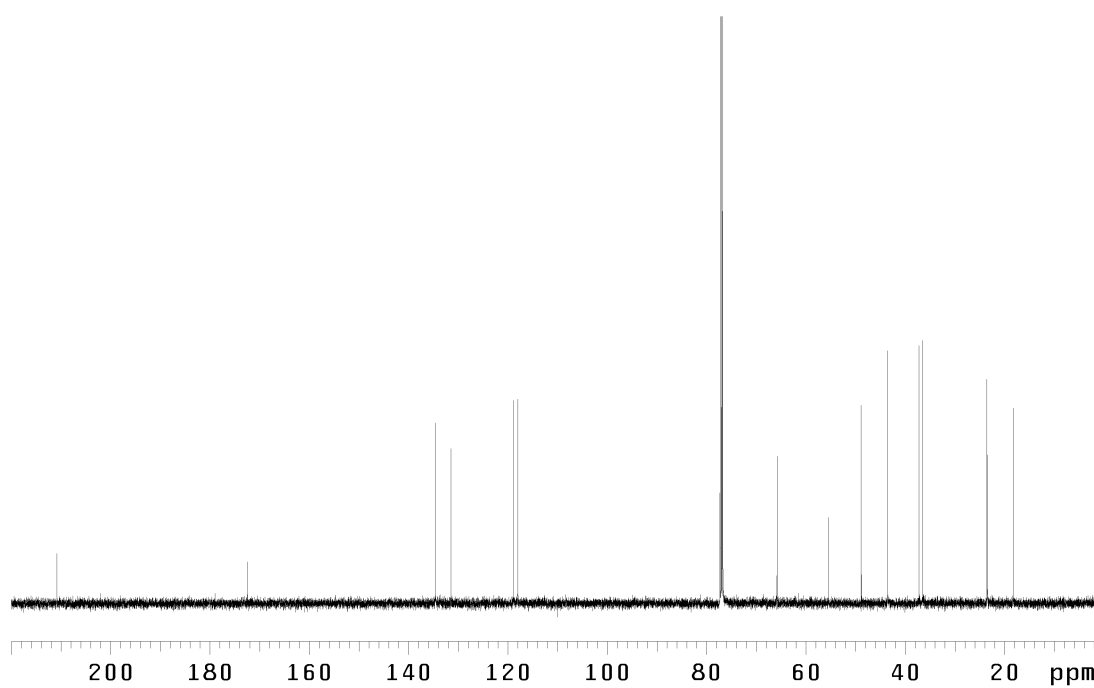


Figure A4.9 ¹³C NMR (125 MHz, CDCl₃) of β -ketoester **287(A)**.

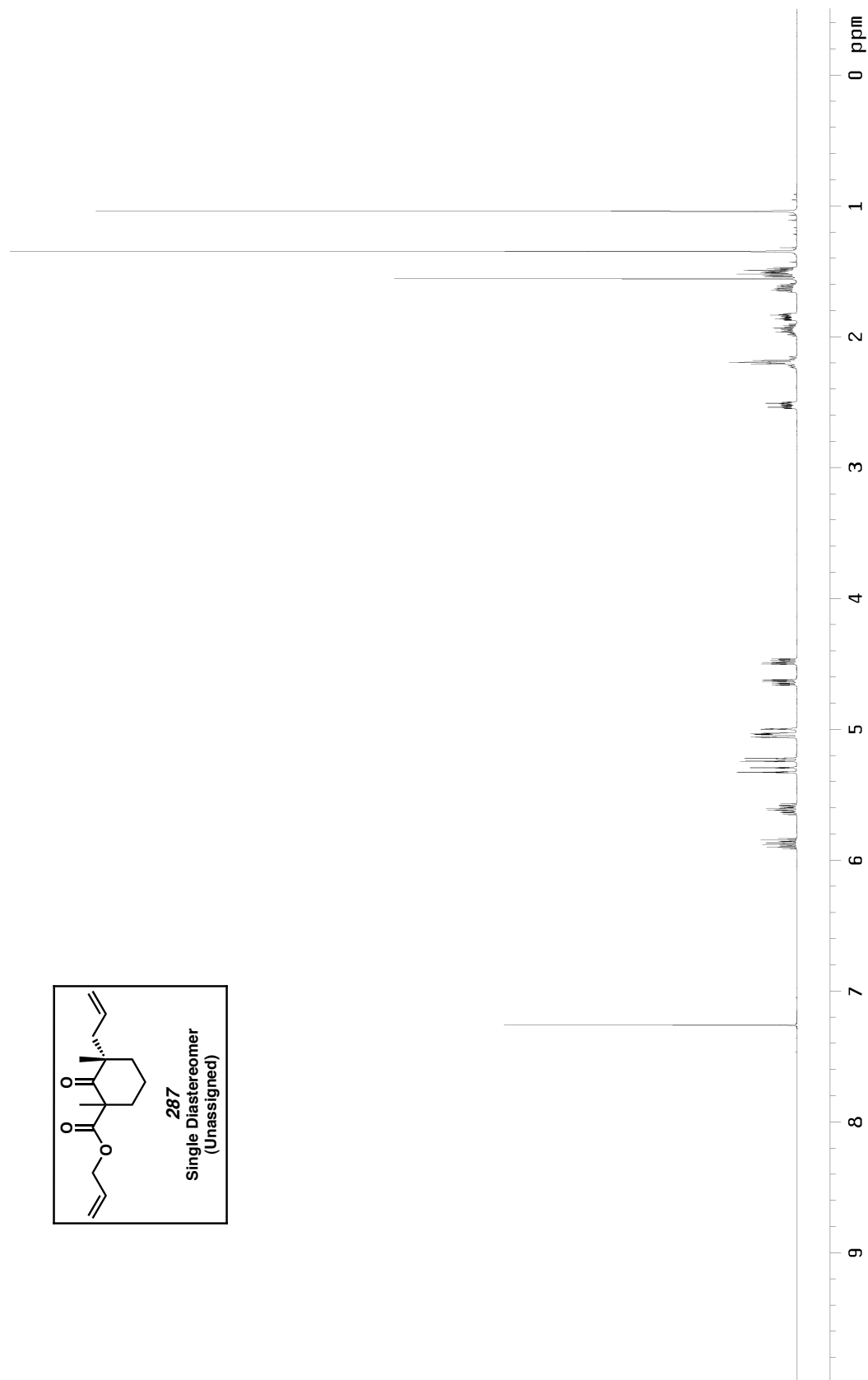


Figure A4.10 ^1H NMR (500 MHz, CDCl_3) of β -ketoester **287(B)**.

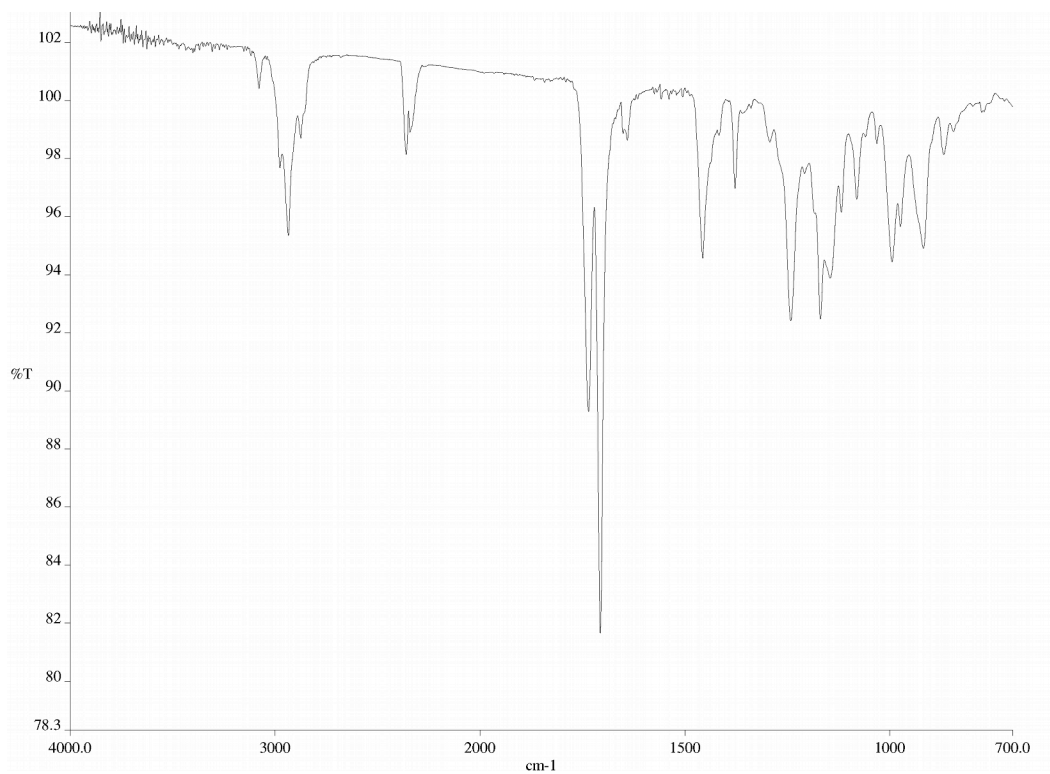


Figure A4.11 Infrared spectrum (thin film/NaCl) of β -ketoester **287(B)**.

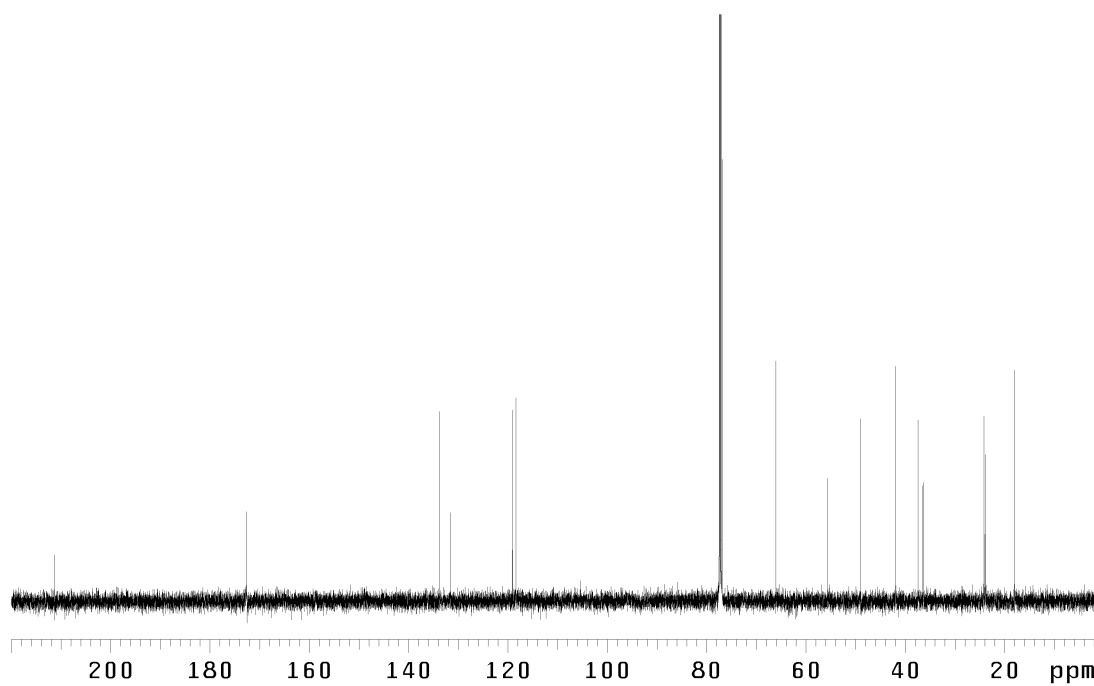


Figure A4.12 ¹³C NMR (125 MHz, CDCl₃) of β -ketoester **287(B)**.

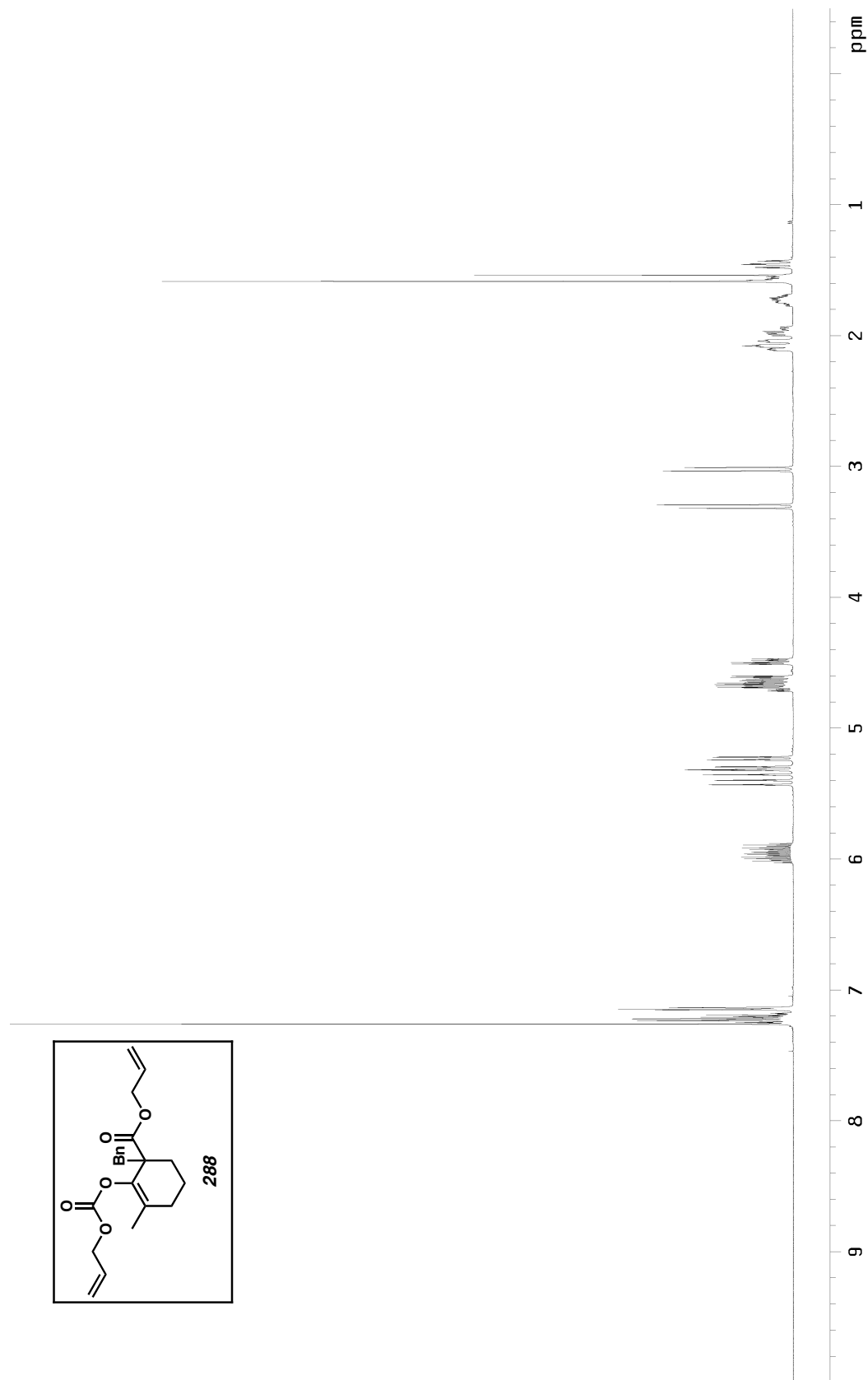


Figure A4.13 ^1H NMR (500 MHz, CDCl_3) of carbonate ester **288**.

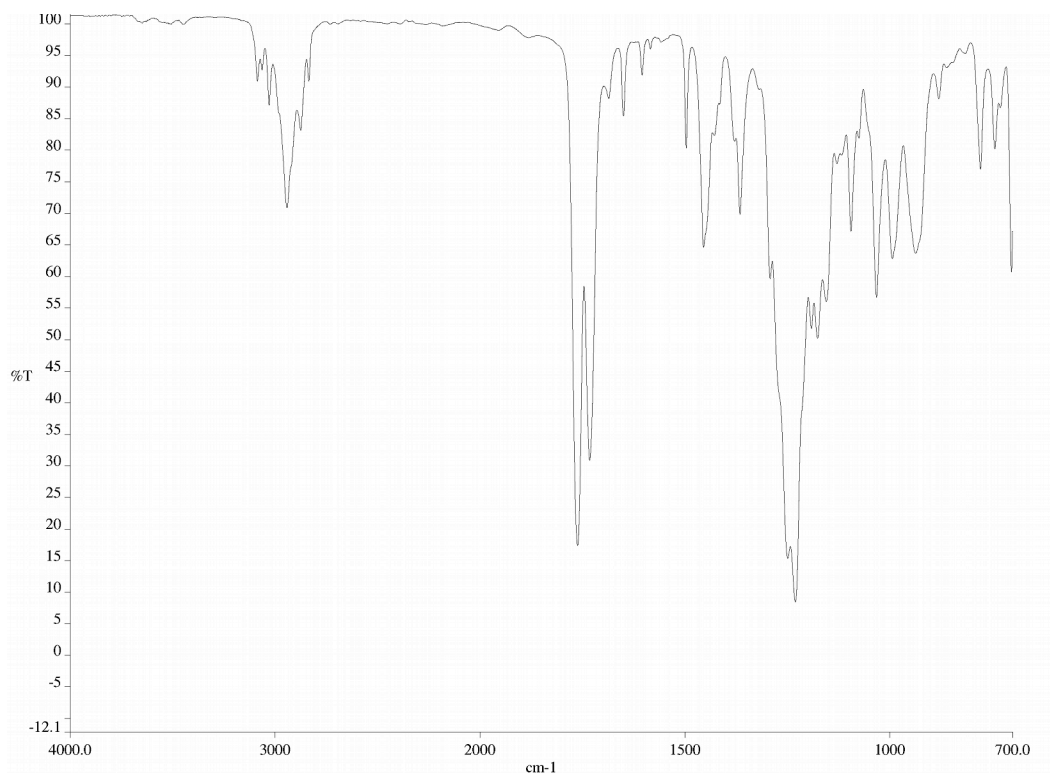


Figure A4.14 Infrared spectrum (thin film/NaCl) of carbonate ester **288**.

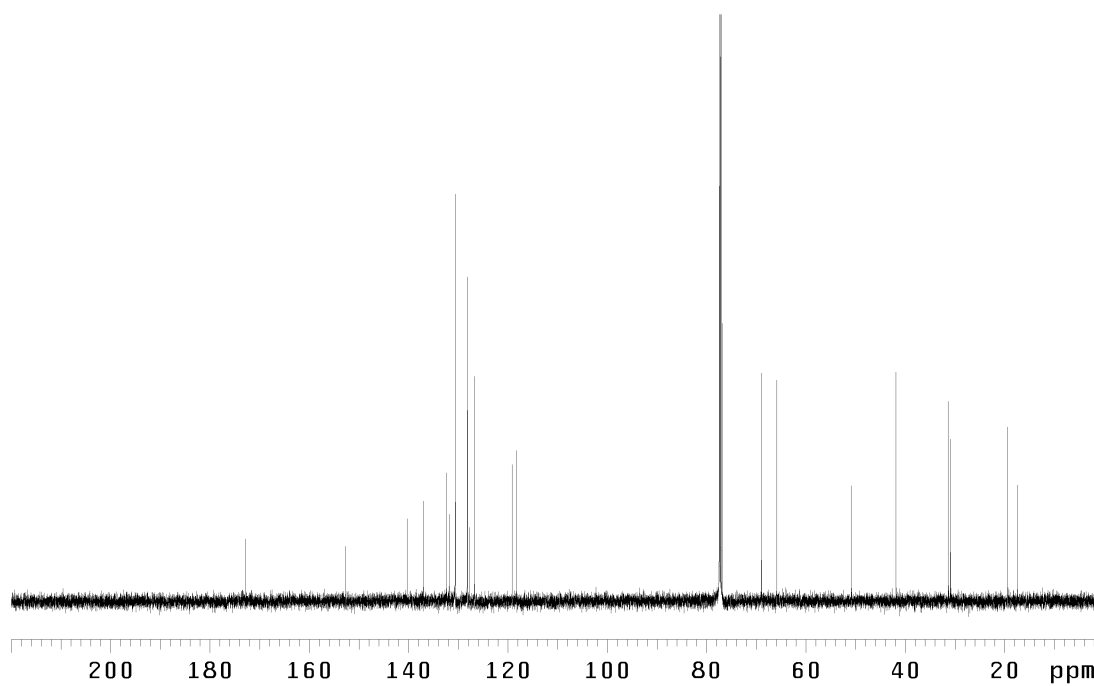


Figure A4.15 ¹³C NMR (125 MHz, CDCl₃) of carbonate ester **288**.

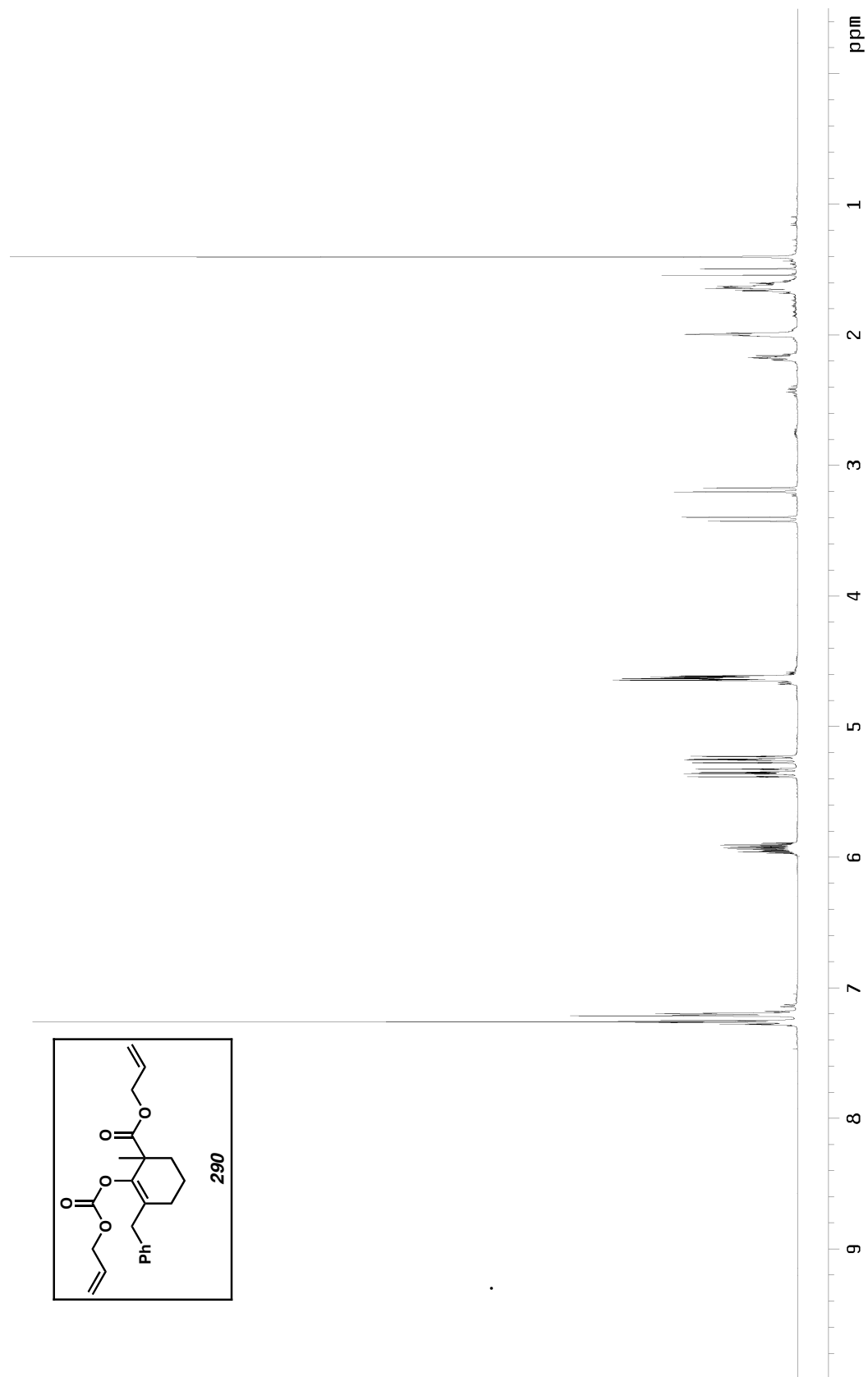


Figure A4.16 ^1H NMR (500 MHz, CDCl_3) of carbonate ester **290**.

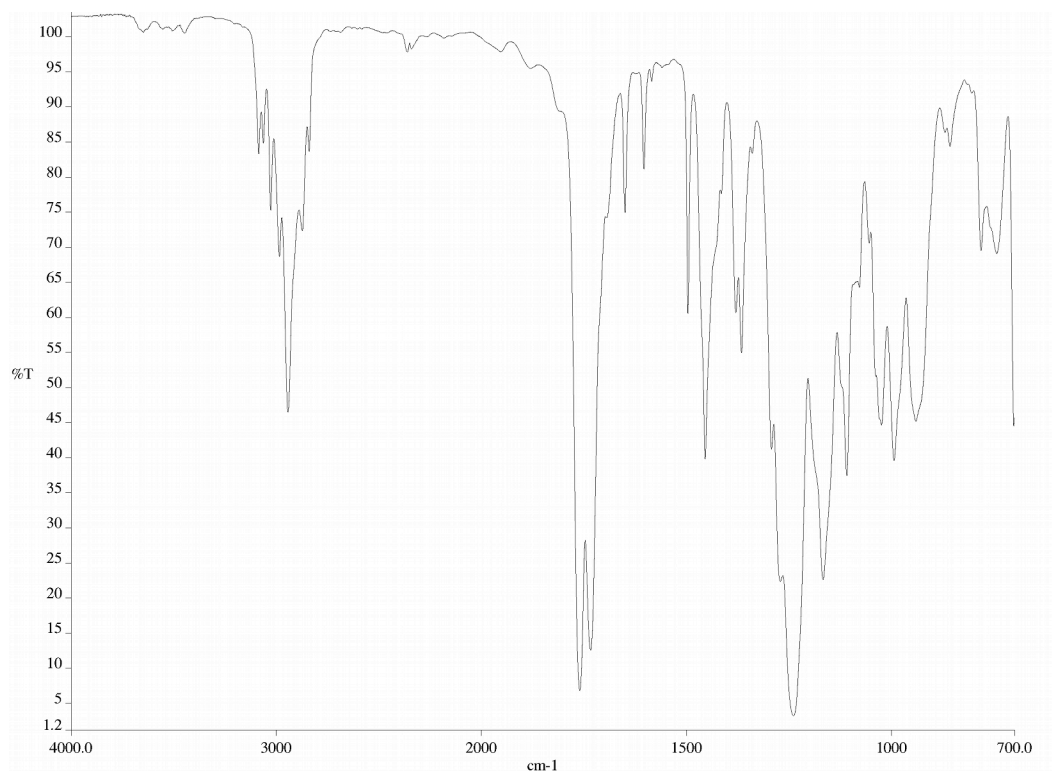


Figure A4.17 Infrared spectrum (thin film/NaCl) of carbonate ester **290**.

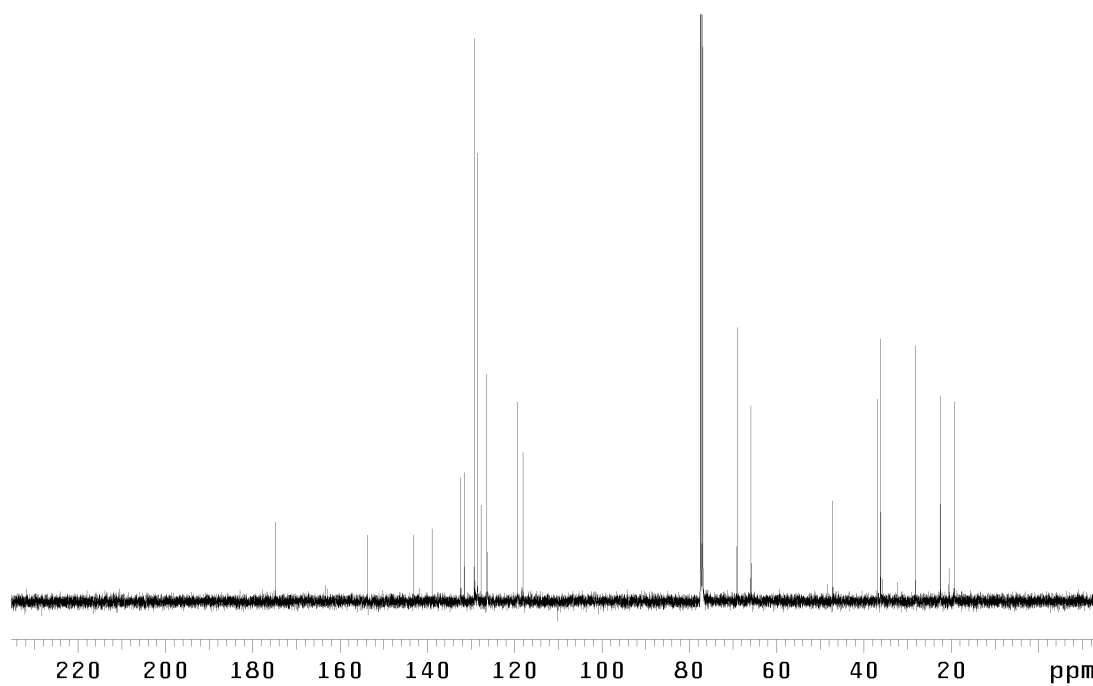


Figure A4.18 ¹³C NMR (125 MHz, CDCl₃) of carbonate ester **290**.

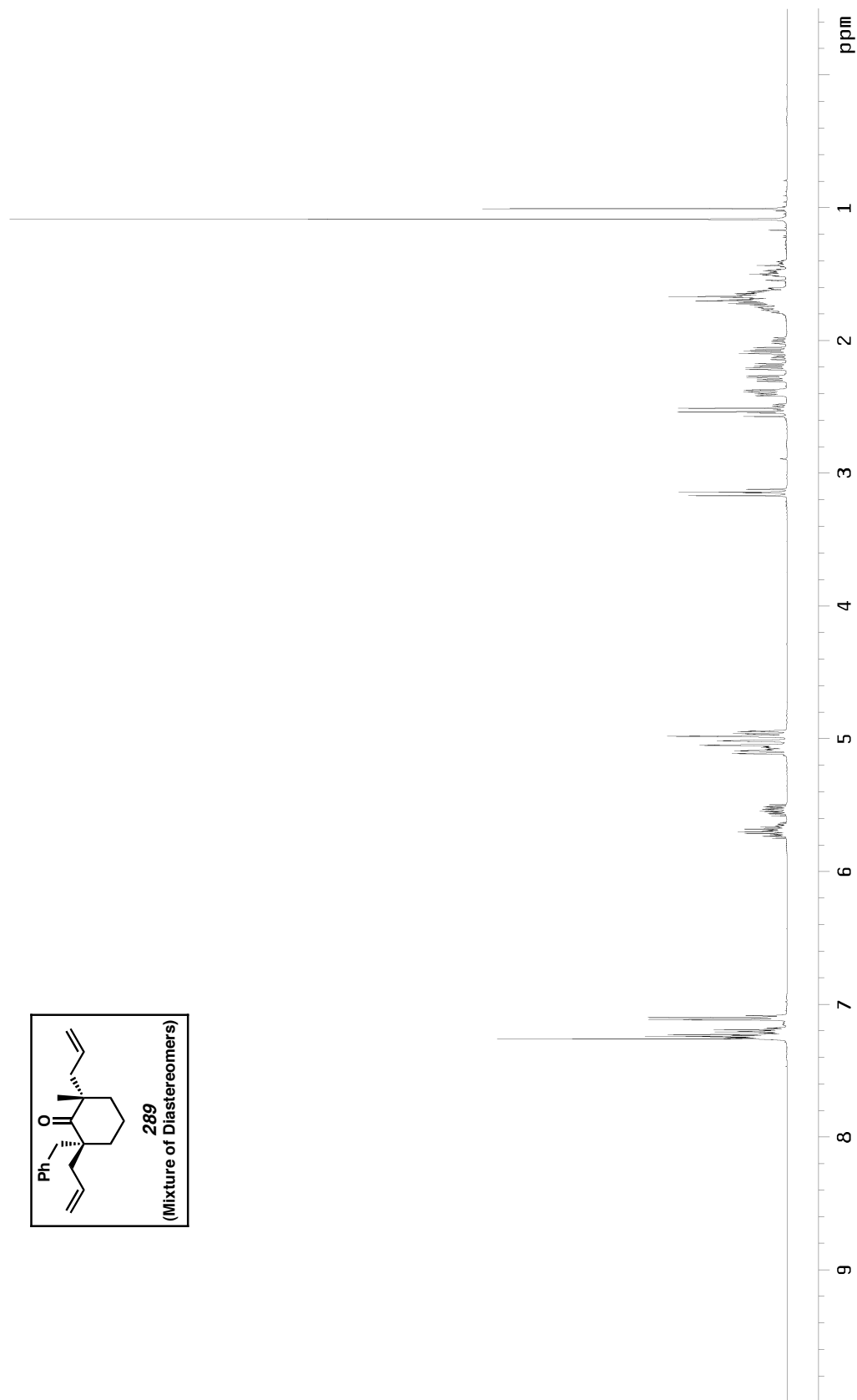


Figure A4.19 ^1H NMR (500 MHz, CDCl_3) of diallyl cyclohexanone **289**.

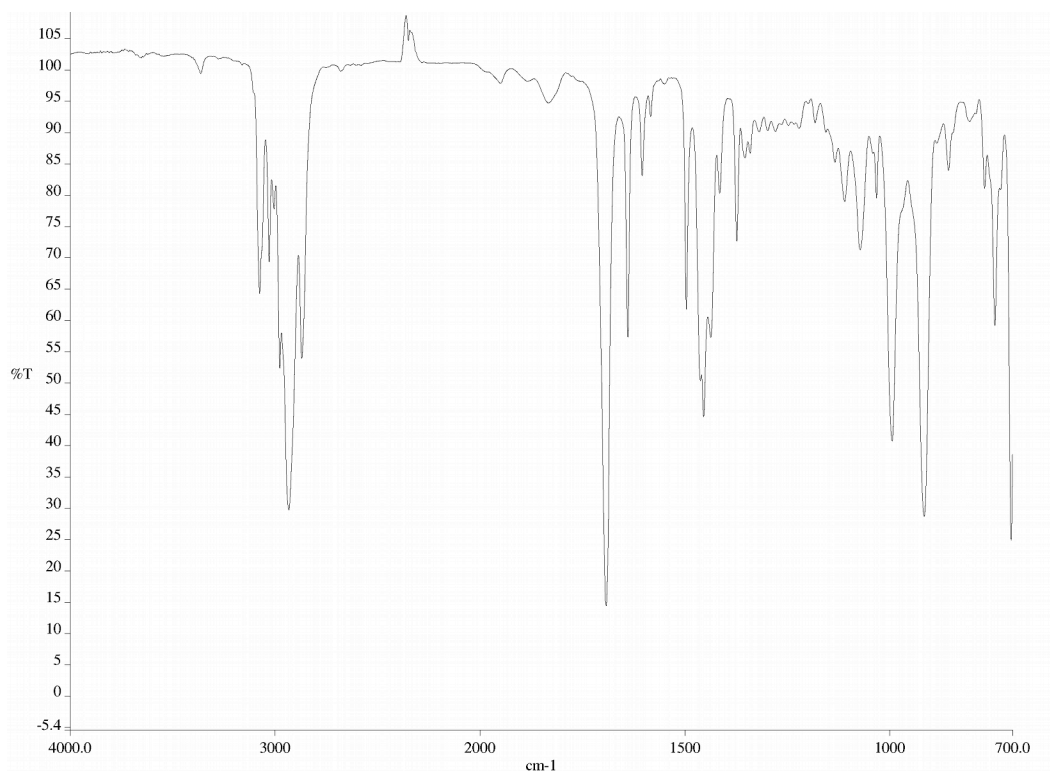


Figure A4.20 Infrared spectrum (thin film/NaCl) of diallyl cyclohexanone **289**.

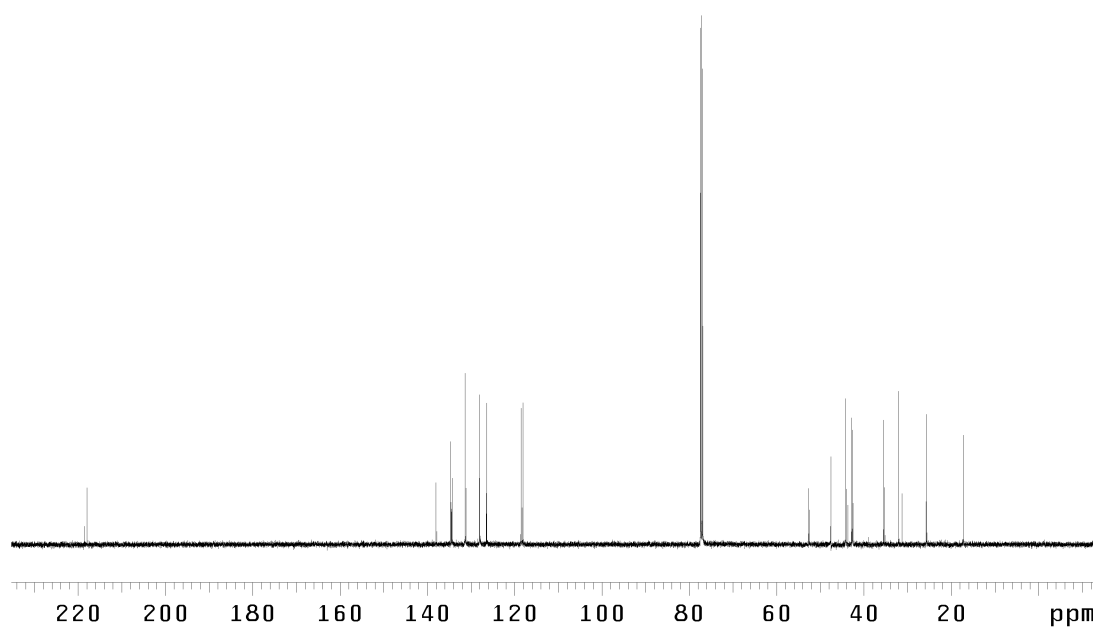


Figure A4.21 ¹³C NMR (125 MHz, CDCl₃) of diallyl cyclohexanone **289**.